WE CLAIM:

1. A method of enhancing photosensitivity of an optical element, comprising:

disposing said optical element in a confinement chamber;

introducing a hydrogen-rich atmosphere into said confinement chamber; and

regulating a temperature of said hydrogen-rich atmosphere over a treatment time,

wherein said regulating a temperature comprises increasing said temperature of said hydrogen-rich atmosphere over a portion of said treatment time.

2. A method of enhancing photosensitivity of an optical element according to claim 1, wherein said regulating a temperature of said hydrogen-rich atmosphere comprises decreasing said temperature of said hydrogen-rich atmosphere over a second portion of said treatment time subsequent to said increasing said temperature.

3. A method of enhancing photosensitivity of an optical element according to claim 2,

wherein a surrounding atmosphere that is external to said confinement chamber is at a room temperature, and

a temperature of said hydrogen-rich atmosphere prior to said increasing said temperature of said hydrogen-rich atmosphere is substantially equal to said room temperature of said surrounding atmosphere.

4. A method of enhancing photosensitivity of an optical element according to claim 3,

wherein a temperature of said hydrogen-rich atmosphere subsequent to said decreasing said temperature of said hydrogen-rich atmosphere is substantially equal to said room temperature of said surrounding atmosphere.

5. A method of enhancing photosensitivity of an optical element according to claim 1, further comprising regulating a pressure of said hydrogen-rich atmosphere over said treatment time,

wherein said regulating a pressure of said hydrogen-rich atmosphere comprises decreasing a hydrogen partial pressure of said hydrogen-rich atmosphere during said increasing said temperature of said hydrogen-rich atmosphere.

6. A method of enhancing photosensitivity of an optical element according to claim 2,

wherein said regulating a temperature of said hydrogen-rich atmosphere comprises increasing said temperature of said hydrogen-rich atmosphere over a third portion of said treatment time, subsequent to the first-mentioned portion of said treatment time, at a rate of increase that is greater than a rate of increase of the first-mentioned increasing said temperature.

7. A method of enhancing photosensitivity of an optical element according to claim 6, wherein said regulating a temperature of said hydrogen-rich atmosphere comprises decreasing said temperature of said hydrogen-rich atmosphere over a fourth portion of said treatment time, prior to said second portion of said treatment time, at a rate of decrease that is greater in magnitude than a rate of decrease of the first-mentioned decreasing said temperature.

8. A method of enhancing photosensitivity of an optical element according to claim 1, wherein said optical element is an optical waveguide.

9. A method of enhancing photosensitivity of an optical element according to claim 8, wherein said optical waveguide is an optical fiber.

10. A method of enhancing photosensitivity of an optical element according to claim 4, wherein a ramp-up-ramp-down temperature profile of said hydrogen-rich atmosphere has a maximum value less than 250°C.

11. A method of enhancing photosensitivity of an optical element according to claim 10, wherein said ramp-up-ramp-down temperature profile has a maximum value less than 100°C.

12. A method of enhancing photosensitivity of an optical element according to claim 4, wherein a ramp-up-ramp-down portion of a ramp-up-spike-ramp-down temperature profile has a maximum less than 250°C, and

a spike portion of said ramp-up-spike-ramp-down temperature profile has a maximum greater than 250°C.

13. A method of enhancing photosensitivity of an optical element according to claim 14, wherein a ramp-up-ramp-down portion of a ramp-up-spike-ramp-down temperature profile has a maximum less than 100°C, and

a spike portion of said ramp-up-spike-ramp-down temperature profile has a maximum greater than 250°C.

14. A method of producing an optical element, comprising:

exposing said optical element to a hydrogen-rich atmosphere for a treatment period of time;

varying a temperature of said hydrogen-rich atmosphere during said treatment period; and

irradiating said optical element with electromagnetic radiation.

15. A method of producing an optical element according to claim 14, wherein said varying a temperature of said hydrogen-rich atmosphere comprises a ramp-up in temperature, followed by a ramp-down in temperature.

16. A method of producing an optical element according to claim 15, wherein said varying a temperature of said hydrogen-rich atmosphere comprises a spike-up and spike-down temperature profile.

17. A method of producing an optical element according to claim 16, wherein said spike-up and spike-down temperature profile has a maximum greater than 250°C.

18. A method of producing an optical element according to claim 15, further comprising varying a partial pressure of said hydrogen-rich atmosphere during said ramp-up and ramp-down in temperature.

19. A method of producing an optical element according to claim 18, wherein said varying a partial pressure of said hydrogen-rich atmosphere comprises decreasing said partial pressure while said temperature is being ramped up.

20. A method of producing an optical element according to claim 15, further comprising terminating said exposing said optical element to said hydrogen-rich atmosphere,

wherein said temperature of said hydrogen-rich atmosphere is substantially at a room temperature upon said terminating said exposing said optical element to said hydrogen-rich atmosphere.

21. A method of producing an optical element according to claim 14, wherein said optical element is an optical waveguide.

22. A method of producing an optical element according to claim 21, wherein said optical waveguide is an optical fiber.

23. A method of producing an optical element according to claim 22, wherein said irradiating said optical element with electromagnetic radiation causes a pattern of refractive index variations in said fiber.

24. An optical element treated by the method of claim 1.

25. An optical element treated by the method of claim 2.

26. An optical element treated by the method of claim 4.

27. An optical element treated by the method of claim 6.

28. An optical element treated by the method of claim 9.

29. An optical element treated by the method of claim 14.

30. An optical element produced by the method of claim 15.

31. An optical element produced by the method of claim 19.

32. An optical element produced by the method of claim 20.

33. An optical element produced by the method of claim 22.

34. A method of producing an optical element, comprising:

exposing a high photosensitivity optical fiber to a hydrogen-rich atmosphere for a treatment period of time;

regulating a hydrogen partial pressure of said hydrogen-rich atmosphere during said treatment period of time; and

irradiating said high photosensitivity optical fiber with electromagnetic radiation,

wherein said regulating a hydrogen partial pressure comprises maintaining said hydrogen partial pressure below one atmosphere during said treatment period of time.

35. A method of producing an optical element according to claim 34, further comprising maintaining a temperature of said hydrogen-rich atmosphere below about 100°C.

36. A method of producing an optical element according to claim 35, wherein said temperature of said hydrogen-rich atmosphere is maintained below about 75°C.

37. A method of producing an optical element according to claim 34, wherein said high photosensitivity fiber is a germanium-doped optical fiber.

38. A method of producing an optical element according to claim 37, wherein said germanium-doped optical fiber comprises at least 4.5 mole % GeO_2.

39. An optical element produced by the method of claim 34.

40. An optical element produced by the method of claim 35.

41. An optical element produced by the method of claim 38.